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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/796,512	03/08/2004	Yung-Chieh Hsieh	OC-P7	1929
7590	03/03/2006		EXAMINER	
John P. Wooldridge 114 HONUEA PLACE Kihei, HI 96753			HASAN, MOHAMMED A	
			ART UNIT	PAPER NUMBER
			2873	

DATE MAILED: 03/03/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No.	Applicant(s)
	10/796,512	HSIEH, YUNG-CHIEH 
	Examiner Mohammed Hasan	Art Unit 2873

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on 1/3/2006.
- 2a) This action is FINAL.                            2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 1-9 and 11 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) 11 is/are allowed.
- 6) Claim(s) 1,3-5 and 7-9 is/are rejected.
- 7) Claim(s) 2 and 6 is/are objected to.
- 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on 08 March 2004 is/are: a) accepted or b) objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All    b) Some \* c) None of:
  1. Certified copies of the priority documents have been received.
  2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- 1) Notice of References Cited (PTO-892)
- 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) Notice of Informal Patent Application (PTO-152)
- 6) Other: \_\_\_\_\_.

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 112***

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 9 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out distinctly claim subject matter which applicant regards as the invention.

Regarding claim 9 is rendered indefinite by the use of term  $\Psi_{SR}$ ,  $\Psi_{SR'}$ ,  $\Psi_{PR}$ , and  $\Psi_{PR'}$ . Claim did not defined phase matching condition such as " $\Psi_{SR} - \Psi_{SR'} = \Psi_{PR} - \Psi_{PR'}$ ". Therefore, claim is rendered indefinite.

### ***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 3-5,7, and 8 are rejected under 35 U.S.C. 102 (b) as being anticipated by Fye (4,431,258).

Regarding claim 1, Fye discloses (refer to figure 1) a unpolarized beam splitter (UBS) (11) comprising an internal beam splitting coating (12) that is symmetrical, wherein a beam of light will see about the same layer structure whether it is incident from a front or a rear side of coating (column 4, lines 21 – 31, column 1, line 50).

Regarding claim 3, Fye discloses (refer to figure 2) wherein UBS (33) is operatively located in an optical interlayer and is therein configured to separate an incident beam of light into a first beam of light and a second beam of light (i.e.,  $\lambda_1, \lambda_2$ ) (column 4, lines 63 – 65 ).

Regarding claim 4, Fye discloses, the phase difference between first beam and second beam is independent of the polarization status of incident beam (column 4, lines 63 – 65).

Regarding claim 5, Fye discloses (refer to figure 1) wherein an optical interlayer further comprises a reflector (13) operatively positioned to reflect first beam of light to produce a first reflected beam ( $\lambda_1$ ) and a non-linear phase generator (NLPG) operatively positioned to reflect second beam of light to produce a second reflected beam , wherein first reflected beam and second reflected beam interfere with one another , wherein the frequency dependence of the phase difference of first reflected beam and second reflected beam has a step-like function (column 4, lines 21 – 43) .

Regarding claim 7, Fye discloses (refer to figure 1) wherein UBS (11) is operatively located in an interferometer (as shown in figure 1) and is therein configured to separate an incident beam of light into a first beam of light and a second beam of light (i.e.,  $\lambda_1, \lambda_2$ ) (column 4, lines 21 – 43).

Regarding claim 8, Fye discloses, the phase difference between first beam and second beam is independent of the polarization status of incident beam (i.e.,  $\lambda_1, \lambda_2$ ) (column 4, lines 63 – 65).

***Allowable Subject Matter***

3. Claim 11 is allowed.
4. The following is an examiner's statement of reasons for allowance: The prior art taken either singularly or in a combination fails to anticipate or fairly suggest the limitations of the independent claims, in such a manner that rejection under 35 U.S.C. 102 or 103 would be proper. The prior art fails to teach a combination of all the claimed features as presented in independent claim 11, for example, which include, an unpolarized beamsplitter (UBS) having an internal beam-splitting coating that is designed to approximate the condition such that " $\Psi_{SR} - \Psi_{SR'} = \Psi_{PR} - \Psi_{PR'}$ " wherein  $\Psi_{SR}$  is the phase introduced by UBS for S-polarized light reflected from front side,  $\Psi_{SR'}$  is the phase introduced by UBS for S-polarized light reflected from rear side,  $\Psi_{PR}$  is the phase introduced by the UBS for P-polarized light reflected from front side, and  $\Psi_{PR'}$  is the phase introduced by UBS for P-polarized reflected from rear side and

combining first beam of light and a second beam of light produce an interference pattern.

5. Claims 2 and 6 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

6. The following is a statement of reasons for the indication of allowable subject matter: The prior art fails to show an unpolarized beamsplitter (UBS) having an internal beam-splitting coating is designed such that " $\Psi_{SR} - \Psi_{SR'} = \Psi_{PR} - \Psi_{PR'}$ " wherein  $\Psi_{SR}$  is the phase introduced by UBS for S-polarized light reflected from front side,  $\Psi_{SR'}$  is the phase introduced by UBS for S-polarized light reflected from rear side,  $\Psi_{PR}$  is the phase introduced by the UBS for P-polarized light reflected from front side, and  $\Psi_{PR'}$  is the phase introduced by UBS for P-polarized reflected from rear side.

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The closest prior art as follows:

Ohashi (5,717,523) discloses an unpolarized light beam splitter.

Ito (5,400,179) discloses an optical multilayer thin film and beam splitter.

Li et al (5,912,762) discloses a thin film polarizing device.

### ***Response to Arguments***

8. Applicant's arguments filed 1/3/2006 have been fully considered but they are not persuasive.

9. In response to applicant arguments that Fye (4,431,258) discloses (refer to figure 1) a unpolarized beam splitter (UBS) (11) having an internal beam splitting coating (12) that is symmetrical, and the same layer structure whether it is incident from a front or a rear side of coating (as shown in figure 1) (column 4, lines 21 – 31, column 1, line 50), and the reflector 13 (column 4, line 46). Fye further discloses (refer to figure 2) UBS (33) is operatively located in an optical interlayer and configured to separate an incident beam of light into a first beam of light and a second beam of light (i.e.,  $\lambda_1, \lambda_2$ ) ( column 4, lines 63 – 65 ).

### ***Conclusion***

10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

11. A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mohammed Hasan whose telephone number is (571) 272-2331. The examiner can normally be reached on M-TH, 7:00 AM to 5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ricky L Mack can be reached on (571) 272- 2333. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

MH  
February 25,2006



RICKY MACK  
SUPERVISORY PATENT EXAMINER